Serial No: **09/956,916**
Art Unit: **1762**

Amendments to Claims

Please amend the claims as follows:

1.(currently amended) A method of depositing an optical quality silica film by PECVD (Plasma Enhanced Chemical Vapor Deposition), comprising the steps of:

a) independently setting a ~~predetermined~~ fixed flow rate for a silicon-containing raw material gas at a first value;

b) independently setting a ~~predetermined~~ fixed flow rate for an oxidation gas at a second value;

c) independently setting a ~~predetermined~~ fixed flow rate for a carrier gas at third value;

d) independently setting a fixed flow rate for a dopant gas at a fourth value;

e) independently setting a predetermined total deposition pressure at a fifth value;

f) said first, second, third, fourth, and fifth values being selected by observing FTIR spectra of films deposited under different conditions ~~and~~ and selecting values that result in minimal absorption peaks for oscillators in the deposited films;

f) depositing a silica film using said selected values; and

e) ~~applying~~ performing a post deposition heat treatment ~~to the~~on said ~~deposited~~ silica film at a temperature selected to ~~optimize~~ minimize the mechanical stress induced in said film by said heat treatment. ~~the mechanical properties without affecting the optical properties determined in steps *a* to *d*.~~

~~2.~~(2. (~~cancelled~~Cancelled)

~~3.~~(3. (~~cancelled~~Cancelled)

4.(original) A method as claimed in claim 1, wherein the post deposition heat treatment temperature lies in the range 600 to 900°C.

~~5.~~(5. (~~original~~Original) A method as claimed in claim 4, wherein the deposition is carried out at a temperature in the range 100 to 650°C.

6.(original) A method as claimed in claim 5, wherein the deposition is carried out at a temperature of about 400°C.

7.(original) A method as claimed in claim 1, wherein the raw material gas is selected from the group consisting : silane, SiH_4; silicon tetra-chloride, $SiCl_4$; silicon tetra-fluoride, SiF_4; disilane, Si_2H_6; dichloro-silane, SiH_2Cl_2; chloro-fluoro-silane $SiCl_2F_2$; difluoro-silane,

SiH_2F_2; and any other silicon containing gas containing hydrogen, H, chlorine, Cl, fluorine, F, bromine, Br, or iodine, I.

8.(original) A method as claimed in claim 7, wherein the oxidation gas is selected from the group consisting of: nitrous oxide, N_2O; O_2, nitric oxide, NO_2; water, H_2O; hydrogen peroxide, H_2O_2; carbon monoxide, CO; and carbon dioxide, CO_2.

9.(currently amended) A method as claimed in claim 8, wherein the ~~carried~~ carrier gas is selected from the group consisting of nitrogen, N_2; helium, He; neon, Ne; argon, Ar; ~~or~~ and krypton, Kr.

10.(currently amended) A method as claimed in claim ~~2~~1, wherein the dopant gas is selected from the group consisting of phosphene, PH_3; diborane, B_2H_6; Arsine (AsH_3); Titanium hydride, TiH_4; germane, GeH_4; Silicon Tetrafluoride, SiF_4; and carbon tetrafluoride, CF_4.

11.(currently amended) A method as claimed in claim ~~2~~1, wherein the raw material gas is SiH_4, the oxidation gas is N_2O, the carrier gas is N_2, and the dopant gas is PH_3.

12.(original) A method as claimed in claim 11, wherein the SIH_4 gas flow is set at about 0.2 std liters/min., the N_2O gas flow is set at about 6.00 std liters/min., the N2 flow is set at about 3.15 liters/min., and the PH_3 is set at about 0.50 std liters/min.

13.(currently amended) A method of depositing an optical quality silica film by PECVD ~~by PECVD (Plasma Enhanced Chemical Vapor Deposition)~~, comprising the steps of:

a) ~~independently~~ setting a flow rate for SiH_4 at about 0.2 std liters/min.;

b) ~~independently~~ setting a flow rate for N_2O at about 6.00 ~~2~~ std liters/min.;

c) ~~independently~~ setting a flow rate for ~~a carrier~~N_2 gas at about 3.15 std litre/min.;

d) setting a flow rate for PH_3 at about 0.5 std litre/min.

d~~e~~) ~~independently~~ setting ~~a predetermined~~ the total deposition pressure at about 2.6 Torr;

f) depositing a silica film by PECVD under these conditions; and

e~~g~~) ~~applying~~ performing a post deposition heat treatment ~~to~~ of the deposited film in a nitrogen ambient at a temperature between 600° and 900°C for about 30 minutes ~~selected to optimize the mechanical properties without affecting the optical properties determined in steps *a* to *d*~~.

14.(cancelled)

15.(cancelled) .

16.(cancelled)

17.(cancelled).

18.(original) A method as claimed in claim 13, wherein the observed FTIR characteristics of the deposited film are monitored to determine the optimum post deposition heat treatment temperature.

19.(currently amended) A method as claimed in claim 13, wherein said silica film forms a buffer, core or cladding of an optical component.

20.(original) A method as claimed in claim 19, wherein said optical component is a multiplexer or demultiplexer.

21(new) A method as claimed in claim 13, wherein the temperature of said post deposition heat treatment is selected to minimize mechanical stress in said silica film.

22.(new) A method as claimed in claim 21, wherein said temperature is selected so as to make use of regions of plastic deformation on the mechanical stress hysteresis curve for said silica film.

23.(new). A method as claimed in claim 4, wherein said post deposition heat treatment is performed for about 30 minutes.

24.(new). A method as claimed in claim 1, wherein said post deposition heat treatment is performed under conditions that make use of regions of plastic deformation in the mechanical stress hysteresis curve of the silica film to minimize stress induced by said post deposition heat treatment.

25.(new) A method as claimed in claim 1, wherein the total deposition pressure is at least about 2.6 Torr.

26.(new) A method as claimed in claim 11, wherein the total deposition pressure is at least about 2.6 Torr.